

MAGNUSON

SUPERCHARGERS

Installation Instructions for: Audi S4 V6 (B8, B8.5) & S5 (B8.5)



Step-by-step instructions for installation of
the supercharger system.

*** PREMIUM GASOLINE FUEL REQUIRED ***



ATTENTION!
Your MAGNUSON SUPERCHARGER kit
is sensitive to corrosion!
Use only the vehicle manufacturer
recommended coolant for your engine in
the intercooler system as well.

Magnuson Products LLC
1990 Knoll Drive, Bldg A, Ventura, CA 93003
(805) 642-8833 phone * (805) 677-4897 fax
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INSTALLATION MANUAL

Magnuson Supercharger Kit Audi 3.0L V6 (B8, B8.5)

Please take a few moments to review this manual thoroughly before you begin work: Make a quick parts check to be certain your kit is complete (see Bill of Material (BOM) parts list inside the accessory box). If you discover shipping damage or shortage, please call our office immediately. Take a look at exactly what you are going to need in terms of tools, time, and experience. Review our limited warranty with care.

Use only premium gasoline fuel, 91 octane or better.

Magnuson Products recommend that you run a minimum of one (1) tank of premium fuel through your vehicle prior to installation of the system to prevent any possible damage that may occur due to running the supercharged engine on lower octane fuel.

Magnuson Products Supercharger systems are designed for engines and vehicles in “GOOD” mechanical condition. Magnuson Products recommend that a basic engine system “Health Check” be performed prior to the installation of this supercharger system. Be sure to check for any pending or actual OBDII codes and fix/repair any of the stock systems/components causing these codes. If there are codes prior to the installation they will be there after the installation.

Magnuson Products also recommend the following services to be performed on your vehicle before starting and running the vehicle post supercharger system installation:

- Fuel Filter change
- Engine oil and filter change using factory recommended oil and filter

Note: It is VERY IMPORTANT to use the factory specified oil viscosity. The original equipment manufacturer has selected this grade of oil to work with your other engine systems such as hydraulic chain tensioners and variable cam controls. Deviation from this specification may cause these systems to fail or not function properly. Please refer to your owner’s manual for the recommended oil viscosity for your engine and application.

- Coolant system pressure test and flush. **NOTE: YOU MUST USE AUDI SPECIFIED COOLANT BLEND!**

Non “Magnuson Approved” calibrations or “tuning” will Void ALL warranties and CARB certification.

After you finish your installation and road test your vehicle, please fill out and mail in the limited warranty card, so we can add you to our files (this is important for your protection).

Drive belt = Dayco 7PK1335

Tools Required

- Metric wrench set**
- Metric 3/8" and 1/2" drive metric socket set (standard & deep)**
- 3/8" and 1/2" drive Ft-lbs and in-lbs torque wrenches**
- Phillips and flat head screwdrivers**
- Serpentine belt tool**
- Funnel**
- Drain pan**
- Hose cutters**
- Hose clamp pliers**
- Safety glasses**
- Nut driver**
- Compressed air**
- Blow gun**
- Metric Allen socket set 3/8 drive**
- Metric Allen wrenches**
- Torx socket set 3/8 drive**

Contact Information:

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TABLE OF CONTENTS

Section 1: Tuning Your Vehicle Computer and Initial Steps
Steps 1 - 5 (Pages 5 - 6)

Section 2: Coolant Drainage and Supercharger Removal
Steps 6 - 40 (Pages 6 - 14)

Section 3: Swapping Components from Stock Supercharger
Steps 41 - 61 (Pages 15 - 20)

Section 4: Supercharger Installation
Steps 62 - 69 (Pages 20 - 22)

Section 5: Extension Harness and EVAP Solenoid Replacement
Steps 70 - 78 (Pages 22 - 24)

Section 6: Air Inlet Installation and MAP Sensor Connection
Steps 79 - 88 (Pages 24 - 26)

Section 7: Serpentine Belt and Intercooler Hose Installation
Steps 89 - 113 (Pages 27 - 33)

Section 8: Coolant Fill, Air Bleeding, and Final Test
Steps 114 - 137 (Pages 33 - 39)

Appendices: Diagrams
(Page 39)

NOTE: This instruction manual follows the process we used to complete this installation on our test vehicle. This does not imply there aren't alternate approaches. If you find a procedure or process that improves the installation, please let us know! We strive to create the most comprehensive and complete instruction manuals available.

Section 1: Tuning Your Vehicle Computer and Initial Steps

Any reference to left or right side of vehicle is given from driver's seat perspective.

1. Refer to the supplied APR DPP programming guide for flashing your ECU.
2. Your Intercooler system is sensitive to corrosion. It's very important to use the OEM recommended coolant mixture in your supercharger system as well.
3. Your system requires the use of a minimum 91 Octane gasoline fuel. This system is not compatible with E85 fuel.



4. Remove the negative cable from battery with a 10mm wrench. The battery is located under the spare tire in the trunk. Place a rag over the negative terminal to prevent accidental connection.



5. Install fender covers to protect the paint while working on the car. Refer to the owner's manual for proper lifting and support areas.



Section 2: Coolant Drainage and Supercharger Removal

6. Remove the lower pan cover. There are eleven fasteners to remove.

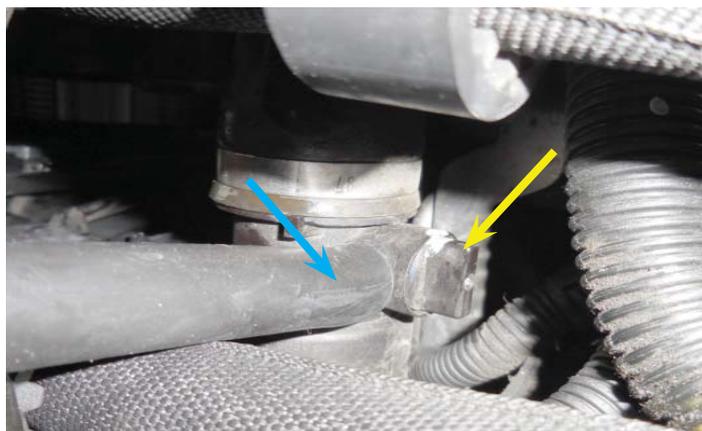


7. This photo shows the pan cover just removed.



Allow the engine to cool down before draining any fluids.

8. Under the car on the right hand side of the radiator is the petcock. Connect a hose to the output of the petcock (shown with a blue arrow) and rotate the lever shown with the yellow arrow to drain the fluid from the radiator. Drain into a clean pan so the fluid may be reused. Close petcock once drainage is complete



9. Remove coil packs and install the six provided spark plugs.

Ensure that the spark plug gap is .024" +/- .002" (.61mm +/- .051mm) This is not the same as the factory specification.



10. Use a low profile 16 mm socket, and serpentine belt removal tool to rotate the serpentine belt tensioner. The flat bar design of this tool will allow you to get into this tight location.



11. Rotate the supercharger serpentine belt tensioner clockwise to release the belt tension. While holding the tension with the tool you can remove the serpentine belt. The tensioner location is shown with an arrow. There is a diagram of the belt routing with the tensioner location at the back of this manual.



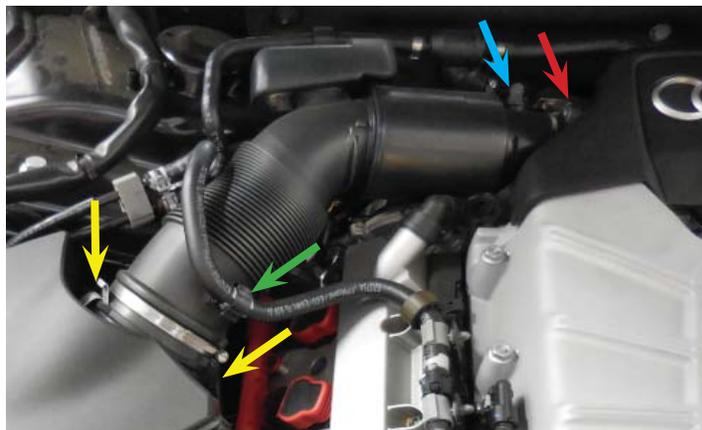
12. Remove the front trim cover from the OEM supercharger by pulling straight up. There are two clips and two pins holding it in place.



13. Remove the rear plastic trim from the OEM supercharger by pulling straight up. There are two clips and two pins holding it in place.



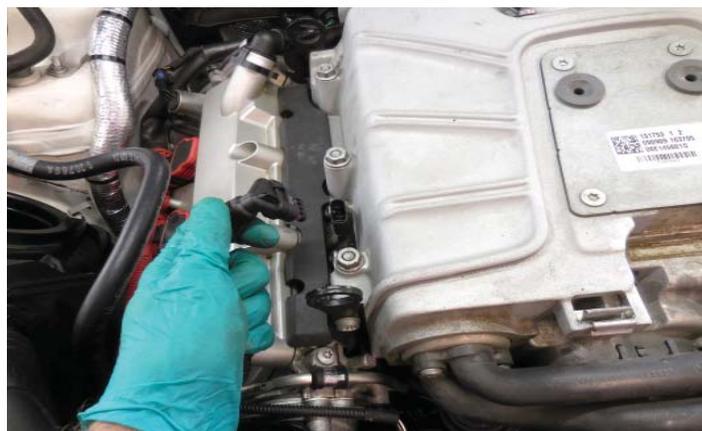
14. Loosen the hose clamp (shown with a red arrow). Disconnect the breather hose from the air inlet hose (shown with a blue arrow). Disconnect the clip holding the fuel line (shown with a green arrow). Now release the two clips holding the air inlet to the air filter box (shown with the yellow arrows).



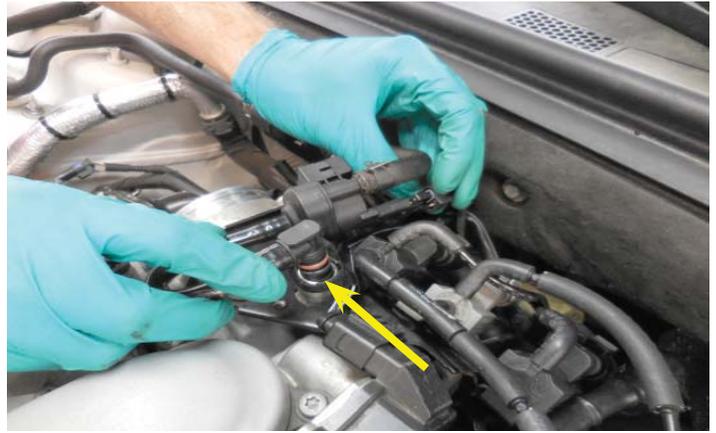
15. This shows the end of the air inlet tube just removed. Loosen the hose clamp (shown with a yellow arrow). Remove the air tube adaptor (shown with a blue arrow) for later use with the provided air inlet tube.



16. Disconnect the MAP sensor connectors from the left and right sides of the OEM supercharger. The right side MAP sensor connector is shown being disconnected.



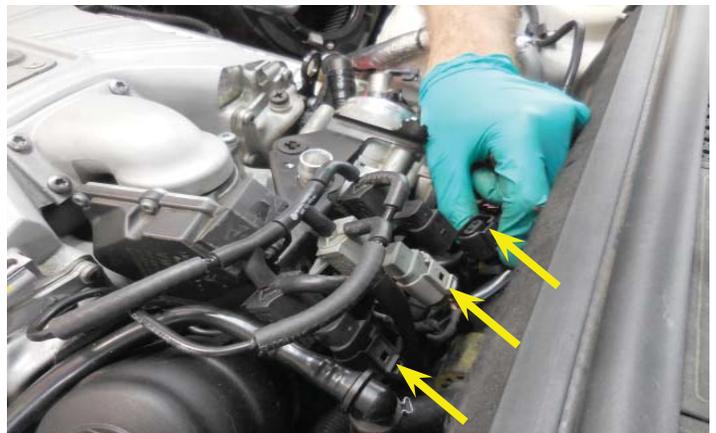
17. Disconnect the EVAP solenoid valve and the wire connections to it. Pinch in on the sides of the connector to pull it out. This connector is shown with an arrow.



18. Remove the electrical connector for the bypass control motor.



19. Remove the three electrical connectors for the vacuum valves. Make sure to mark these since two of them are identical in color and type.



20. Remove the two screws from the center vacuum valve shown with a T25 Torx head screwdriver.



21. Press the end clips together and slide the two side vacuum valves off the bracket and move all three vacuum valves out of the way.



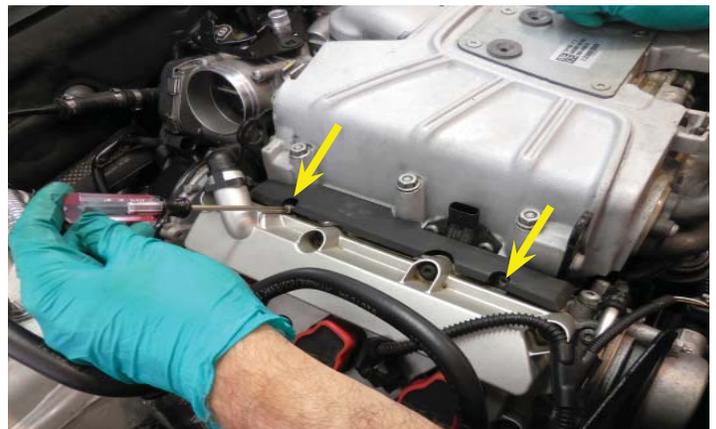
22. Remove the electrical connector to the rear TMAP sensor shown with an arrow.



23. Disconnect the electrical connector from the throttle body.



24. Remove the two T25 Torx fasteners holding the right OEM supercharger trim cover. Remove this plastic cover.



25. Pull the hose on the left side OEM supercharger trim cover free from the two plastic clips.



26. Remove the two T25 Torx bolts holding the left OEM supercharger trim cover in place. Remove the left trim cover.



27. At the front of the engine use hose clamp pliers to remove the four hose clamps holding the small sections of intercooler hose shown in the next step. This tool makes removing these clamps much easier than regular pliers.



28. Remove the two intercooler hose sections shown after the hose clamps from the last step have been slid out of the way.



29. Remove the hose clamps and hoses from the underside of the intercooler hard lines on the left and right side of the car.



30. Remove the lower T30 Torx headed bolt from the left side of the intercooler hard lines.



31. Remove the lower T30 Torx headed bolt from the right side of the intercooler hard lines.



32. Remove the upper T30 Torx headed bolt from the intercooler hard lines.



33. Proceed to remove the intercooler hard lines from the engine bay. These hard lines are shown in the photo. Save the bolts from these hard lines. The bolts will be used with the new supplied hard lines.



34. If you have a B8.5 model your OEM hard line assembly will look like the one in this photo. You will therefore have to remove the hoses on the left side of the car only. When you install the new provided hard lines it will be necessary to connect them to the proper upper or lower hoses that were connected to this OEM hard line.



35. Clean around the supercharger with compressed air BEFORE lifting to prevent debris from falling into the ports. Remove the six nuts holding the supercharger in place with a 13 mm socket wrench. Save these nuts for installation of the new supercharger.



36. Fasten a set of straps to hold the OEM supercharger with the OEM locations at the four corners of the supercharger. Pull straight up on the supercharger to remove it from the engine. You may need help for this procedure.



37. This photo shows the engine with the OEM supercharger removed. Be careful not to drop anything into the ports.



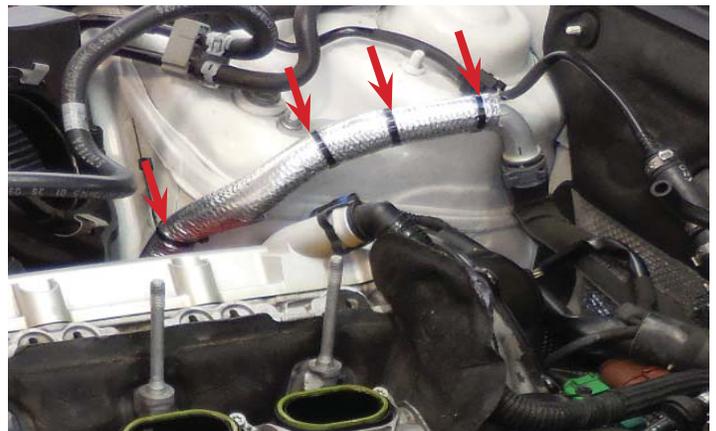
38. Clean intake ports with a clean dry rag. Remove the 6 O-ring seals and replace them with the new provided seals. Vacuum out any debris from intake ports. Ensure that nothing gets inside the combustion chamber, or PCV fitting (shown with yellow arrow).



39. Place a clean rag over the ports to prevent anything from falling into them.



40. Install the provided heat shield onto the heater hose shown. Secure in place with zip-ties (shown with arrows).



Section 3: Swapping Components from Stock Supercharger

41. Gather the provided throttle wiring harness extender shown in the photo.



42. Connect the provided throttle wiring harness extender to the connector shown.



43. Add the two small sections of provided 3/16" (4.8 mm) hose with the two provided 5/32" (4 mm) hose menders to extend the hoses shown. The hoses will be cut to 2.25" (57 mm) and 2.75" (70 mm).



44. Gather the new throttle body, and four provided bolts. These will be installed on the new supercharger. Make sure that the O-ring is installed in the location shown with an arrow.



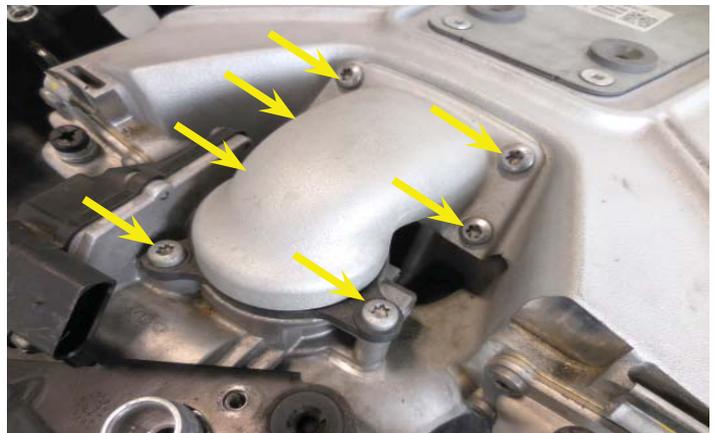
45. Install the new throttle body in the location shown with the provided bolts. Torque the four bolts using a crisscross pattern to 106 in-lbs (12 N-m).



46. Prepare an area to have the two superchargers side by side. This will allow you to transfer some parts from the OEM unit to the new one.



47. Remove the seven bolts holding the bypass valve assembly in place using a T30 Torx socket. Remove the bypass valve assembly.



48. Clean the mating surfaces on the bypass valve assembly and replace the O-rings with the provided parts. Install the bypass valve assembly onto the new supercharger in the location shown.



49. The bypass assembly comes apart into two pieces. Clean the mating surfaces and replace the O-rings with the provided parts. There are 2 orange and 2 black O-rings supplied. Replace original with color matched supplied O-ring.



50. Install the OEM fasteners to secure the bypass valve assembly. The four shorter bolts are located in the areas with the arrows. Torque all seven bolts to 106 in-lbs (12 N-m).



51. Remove the two bolts holding the TMAP sensors on both sides of the OEM supercharger.



52. Photo shows MAP sensor being removed. Make sure to remove the other one from the opposite side as well. Transfer these TMAP sensors to the same locations on the new supercharger. Inspect O-rings and replace if necessary.



53. Lubricate the O-rings and install the two OEM TMAP sensors just removed to the corresponding sides of the new supercharger.



54. Remove the two bolts shown with the red arrows. This is the rear TMAP sensor. These bolts will be discarded. New bolts are provided for installation of this TMAP sensor on the new supercharger. Do not mix this TMAP sensor with the others.



55. This is the location for the rear OEM TMAP sensor on the new supercharger.

Do not use the original bolts for this TMAP sensor. Use the two provided M6 x 12mm length bolts.



56. Gather the provided brackets and bolts. They will be used to hold the vacuum valves at the back of the supercharger.



57. Slide the two outer vacuum valves on the new bracket as shown. The center vacuum valve will line up with the two bolt holes in the bracket.



58. Place the smaller bracket in the location shown to trap the two outer vacuum valves in place.



59. Flip the whole bracket assembly over, and attach the two bolts through the center vacuum valve and the first bracket and into the threaded holes in the other bracket. Tighten the assembly in place.



60. Use a provided zip-tie to hold the fourth vacuum valve to plastic hose sheath shown. The zip tie is shown attached loosely for visual clarity. Make sure the zip-tie is snug, and trim off the excess end.



61. Install the provided heat shields on the left and right catalytic converters at the rear of the engine using a provided large hose clamp. The left catalytic converter is shown in this photo completely installed.



Section 4: Supercharger Installation

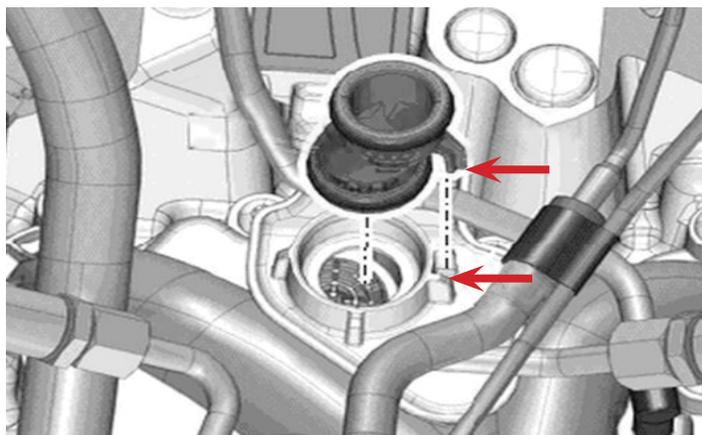
62. Remove the towel that you used to cover the intake ports.



63. Check to make sure that the PCV port in the center of the engine is clocked in the correct direction. Refer to the illustration in the next step for proper orientation.



64. Ensure that the tab on the PCV port lines up with the notch shown. Also check the O-rings for damage. Replace O-rings if necessary. Lubricate the O-rings with some Lubriplate grease for ease of supercharger installation.



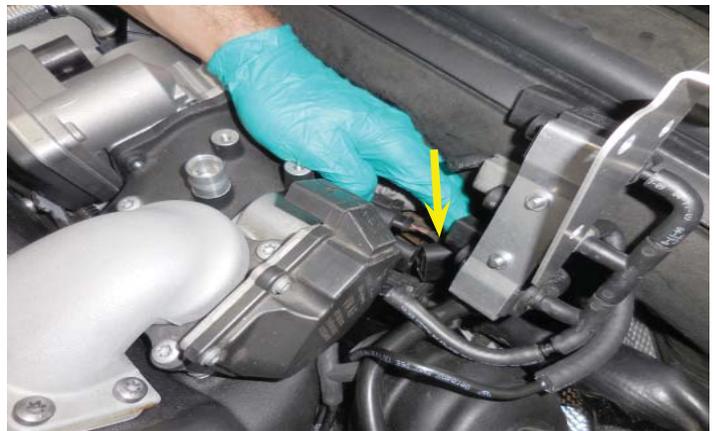
65. Have someone help you with the installation of the new supercharger onto the engine. Carefully line up the mounting holes with the OEM studs.



66. Apply Loctite 242 to the 6 OEM nuts and install in the locations shown with arrows. Torque the six nuts to 15 ft-lbs (20 N·m). Follow the torque order given in the photo.



67. Attach the bypass electrical connection where shown with the arrow.



68. Attach electrical connections for all three vacuum valves that were removed before. Attach them the same as they were labeled before.



69. Attach the new bracket in the location shown with the three provided M6 x 12 mm bolts.



Section 5: Extension Harness and EVAP Solenoid Replacement

70. Gather the provided EVAP solenoid extension harness.



71. Attach the provided EVAP solenoid extension harness to the location shown.



72. Test fit your EVAP solenoid hose connection to the supercharger. If it fits in the location shown with an arrow you will not need to replace the hose section shown in the next step. If you do find that there is a problem with hose assembly you will have to remove the EVAP solenoid assembly for modification.



73. If necessary, remove the OEM EVAP tubing shown. You will have to make a slit in the OEM tubing near the solenoid (shown with the yellow arrow) to remove the hose section with the 90° quick connect fitting.



74. Gather the provided formed hose, 90° fitting, and step-less clamps. Install the OEM EVAP solenoid and the provided 90° fitting to the formed hose using the provided step-less clamps to make the new assembly shown.

Use step-less pliers to tighten the clamps in place after installation. This will allow you to rotate the fittings to the proper orientations.



75. Reinstall the modified EVAP solenoid assembly onto the hose, and clamp into place.



76. Install hose the 90° quick connect fitting onto the supercharger fitting where shown.



77. Slide the EVAP solenoid assembly onto the bracket as shown. Once this assembly is in place then you can tighten the step-less clamps.



78. Install the electrical connection from the EVAP solenoid extension harness at location shown.



Section 6: Air Inlet Installation and MAP Sensor Connection

79. Install electrical connection from throttle extension harness.



80. Install the inlet hose adaptor to the provided inlet hose. Keep this connection loose for now until the adaptor has been secured at the air filter box.



81. Cut 3.25" (83 mm) of the provided 1/4" (6.4 mm) ID hose. Assemble the 1/4" (6.4 mm) ID x 3.25" (83 mm) length hose with the 90° fitting and the hose mender using the step-less ear hose clamps. Press them in past the bard and to the stop. You may need to use some lithium grease to allow the fitting to press in completely. These components are not shown fully installed.



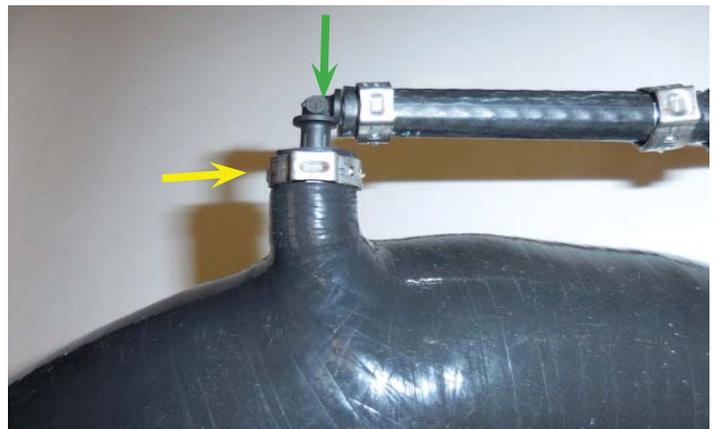
82. Add the 3.25" (83 mm) hose assembly from the last step to the OEM breather line that was connected to the original air inlet hose. This will provide enough length to the hose for connection to the provided air inlet hose in the next step.



83. Attach the 90° fitting installed in the last step to the air inlet hose at the area shown with the arrow. Reconnect the air inlet adaptor at the air box as it was originally located. Then locate the other end on the throttle body opening. After everything is aligned then proceed to tighten the two hose clamps in place.



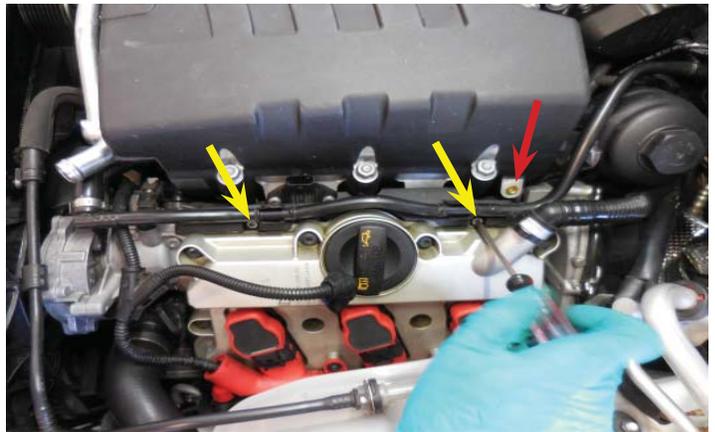
84. Here is a detail photo of the 90° fitting connected in the last step. Press the fitting all the way to the stop, and secure with the step-less ear clamp (shown with the yellow arrow). This fitting is not shown fully installed.



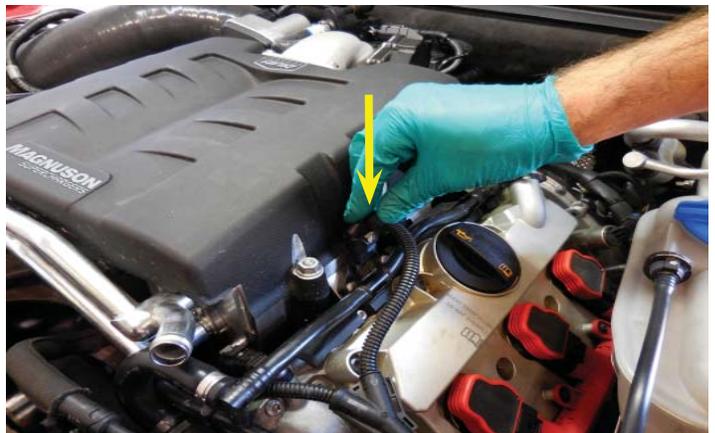
85. Reinstall the right side covers with the two T25 Torx head fasteners.



86. Reinstall the left side cover with two T25 Torx head fasteners (shown with yellow arrows). Press the hose above the left side cover into the clips as it was originally attached. **Note:** The boost port is shown with a red arrow in this image.



87. Connect the left side TMAP sensor.

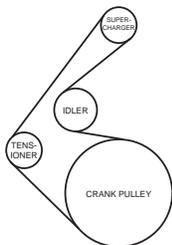


88. Connect the right side TMAP sensor.



Section 7: Serpentine Belt and Intercooler Hose Installation

89. Loosen the belt tensioner and install the new serpentine belt using the OEM routing. A larger diagram is at the back of this manual.



90. Install the 5/8" (16 mm) hose mender into the 5/8" (16 mm) 90° hose (2.75" (70 mm) x 6" (152 mm)) on the shorter end and secure with a silver spring clamp. This will be referred to as the purge hose in later steps.



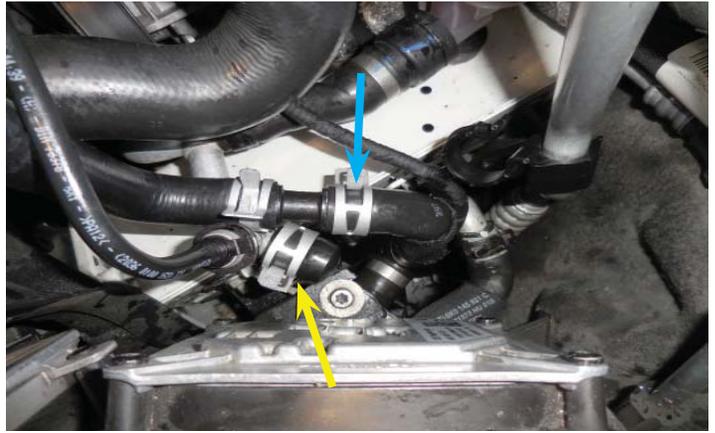
91. Gather the provided items shown in the photo. The clamps and cap will be used to separate the intercooler coolant system from the engine coolant.



92. Remove the hose clamp at the location shown with the arrow. This is located in the engine bay near the back of the left front headlight.



93. Disconnect the line shown in the last photo and use the cap to seal the tube along with the provided silver spring clamp (shown with a yellow arrow). Slide the other side of the hose mender connected to the 90° hose (2.75" (70 mm) x 6" (152 mm)) into the hose and clamp it in place with a provided silver spring clamp (shown with a blue arrow).



94. Gather the following provided bracket.



95. Near the hose connection that was just blocked you will find two studs against the frame. These are shown with arrows in the photo. Remove the two nuts with a 10 mm socket wrench at these locations and use the studs as securing points for the bracket shown in the previous step.



96. Here is an image of the bracket in place. Use the OEM nuts and stud locations shown in the previous photo. The studs are obscured from view in this image. There is another plastic bracket with a 10 mm hex nut in between the two studs that you may need to loosen in order to get this bracket in place.



97. Gather the provided reservoir, and bracket assembly shown.



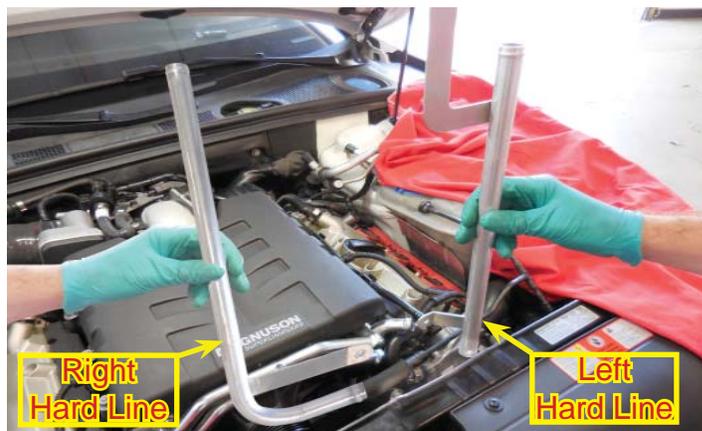
98. Install the reservoir to the bracket just installed using two M5 x 12mm bolts and two M5 nuts provided in the locations shown with arrows.



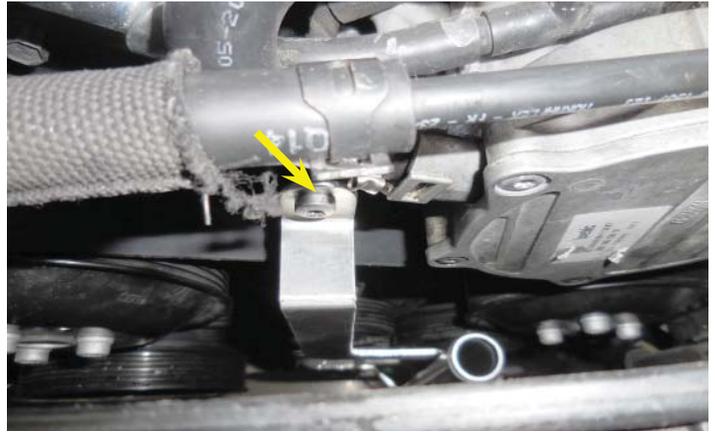
99. Gather the following provided intercooler hard lines. Their mounting holes will be located in the same locations as the OEM hard lines removed earlier.



100. Install the provided intercooler hard lines using the original locations of the OEM hard lines with the lines facing in the directions shown in the photo.



101. Install the bolt shown for the upper left hard line in the location shown.



102. Install the lower bolt for the left hard line in the location shown.



103. Install the lower bolt for the right hard line in the location shown.

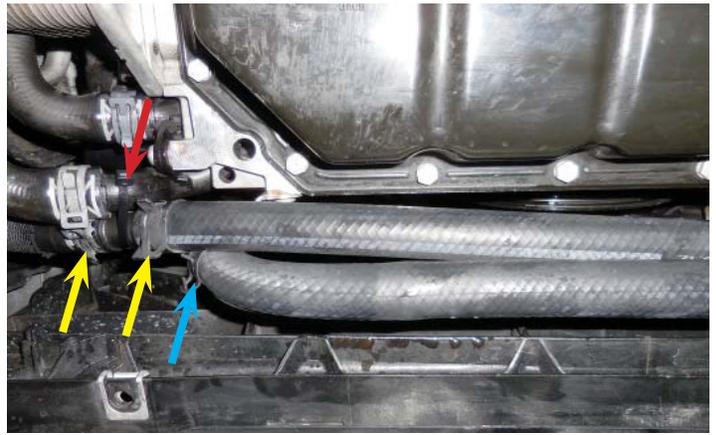


104. Gather the following provided hoses and clamps. The two silver spring clamps will be used to secure the OEM 5/8" (16 mm) ID hose to the smaller side of the reducers. The black hose clamps are for the provided 3/4" (19 mm) ID hose.

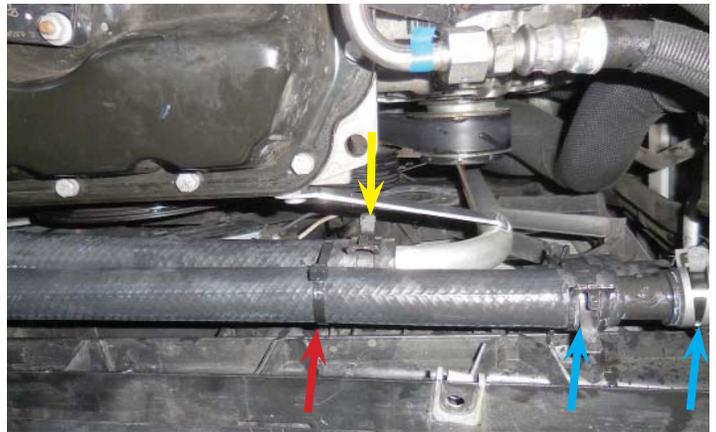


Skip this step if you have a B8.5 model.

105. Install the short end of the 90° hose (4" (102 mm) x 36" (914 mm)) on the left hard line (shown with a blue arrow) and clamp in place. This will be cut to approximately 22" (559 mm) long to reach the hose line on the right side of the car. Install the 18.5" (470 mm) straight hose with a reducer attached to the hose line and clamp both sides of the reducer in place (shown with yellow arrows). Place a zip-tie (shown with a red arrow) to anchor the hose in place.

**Skip this step if you have a B8.5 model.**

106. Connect the opposite end of the 18.5" (470 mm) straight hose from the previous step to the right hard line (shown with a yellow arrow) and clamp in place. Add a reducer to the opposite end of the 90° hose (cut to 4" (102 mm) x 22" (559 mm)) from the previous step and connect to the OEM hose on the right side. Make sure both sides of the reducer are clamped in place (shown with blue arrows). Add another zip tie on this side to keep hoses secure (shown with a red arrow).

**Follow this step if you have a B8.5 model.**

107. Connect the 18.5" (470 mm) straight hose to the right hard line, and clamp in place (shown with the yellow arrow).

**Follow this step if you have a B8.5 model.**

108. Cut the 90° hose (4" (102 mm) x 36" (914 mm)) to 4" (102 mm) x 4" (102 mm). This will be used to connect the left hard line to the lowest OEM hose that was connected to the OEM hard line. Use a provided reducer, and two clamps (1 silver and 1 black) to secure the connection (shown with yellow arrows). Connect the opposite side of the 18.5" (470 mm) straight hose from the last step to the other OEM hose that was connected to the OEM hard line. Use a provided reducer, and two clamps (1 silver and 1 black) to secure the connection (shown with red arrows).



109. Install the short section of 3/4" 90° hose (3" (76 mm) x 4" (102 mm)) from the right hard line to the supercharger and clamp both sides in place where shown.



110. Disconnect the vent hose going to the engine coolant reservoir. This will allow more clearance for moving hoses around.



111. Install the longer 90° hose (4" (102 mm) x 10.75" (273 mm)) from the left hard line to the lower reservoir spigot and clamp both sides in place where shown with the arrows.



112. Install the 13.5" (343 mm) straight hose from the upper reservoir spigot to the supercharger and clamp both sides in place where shown with the arrows. Make sure that the hoses are not kinked but also have some slack for engine movement.



113. Reinstall the vent hose to the engine coolant reservoir.



Section 8: Coolant Fill, Air Bleeding, and Final Test

114. Reconnect the negative terminal of the battery, and reinstall the spare tire.



Make sure that the drain plug is closed prior to filling coolant.

115. Fill the engine coolant tank with Audi coolant mixture.



116. Use the same mixture of Audi coolant for the intercooler reservoir.



117. Fill the intercooler reservoir to the maximum level mark.



118. Ensure that coolant is filling up into the purge hose (shown with arrow). Make sure not to overfill the coolant reservoir or the purge hose will overflow.



119. Temporarily install the provided plug in the purge hose.

Never run the engine with the purge hose open or you will cause more air to enter into the inter-cooler system.



120. Start the car, and top off the reservoir. Wait for the coolant to circulate. Run the engine for 3 minutes.



121. Shut off the engine. Check the purge hose for coolant. Top off the reservoir, but not over the height of the purge tube or it will overflow.



122. Plug the purge hose, and install the provided clamp shown. This hose will now be tucked near the radiator and secured.



123. Gather the following provided zip-tie with anchor clip attached.



124. Engage the zip-tie to create a loop. Install that loop around the purge hose. Then press the anchor clip into the edge of the plastic shroud where shown with an arrow.



125. Tighten the zip-tie to secure the purge hose in place. Do not overtighten this zip-tie. Trim of the excess from the zip-tie end.



The Audi intercooler system is difficult to remove air from, even in the stock configuration. We have provided a special tool that will allow you to effectively remove all air from the intercooler system. The added power from the larger supercharger makes it even more important to purge the air from the intercooler system for maximum performance. Neglecting these steps will result in poor performance.

126. Install the provided hose assembly with valve and funnel to the top of the reservoir.



127. Ensure that the O-ring on the aluminium fitting is fully engaged into the opening of the reservoir. Turn the valve handle so it is in-line with the hose as shown.



128. Fill the hose with coolant until it just starts to reach the level of the funnel.



129. Have someone else start the car while you hold the funnel up. While the car is running squeeze the hose attached to the top of the reservoir to help air out of the system.



130. Squeeze the small 90° hose on the right side of the car as well to help evacuate air from the system.



131. Larger air bubbles (shown with the arrow) should be released from the system. You will see them going up through the hose. Run the engine for about 5 minutes, then shut the engine off for 5 minutes.

Repeat this process 5 times while making sure to keep the coolant topped off above the connection point of the hose and funnel. As you repeat this process the bubbles released should reduce in size and quantity.



132. Wrap some rags around the reservoir inlet.
Turn the valve in the position shown to close it.



133. Remove the hose from the reservoir, and place it above the coolant container. Open the valve to allow the coolant to drain into the container.



134. Draw out the excess coolant with a small bottle like the one shown, or other appropriate device.



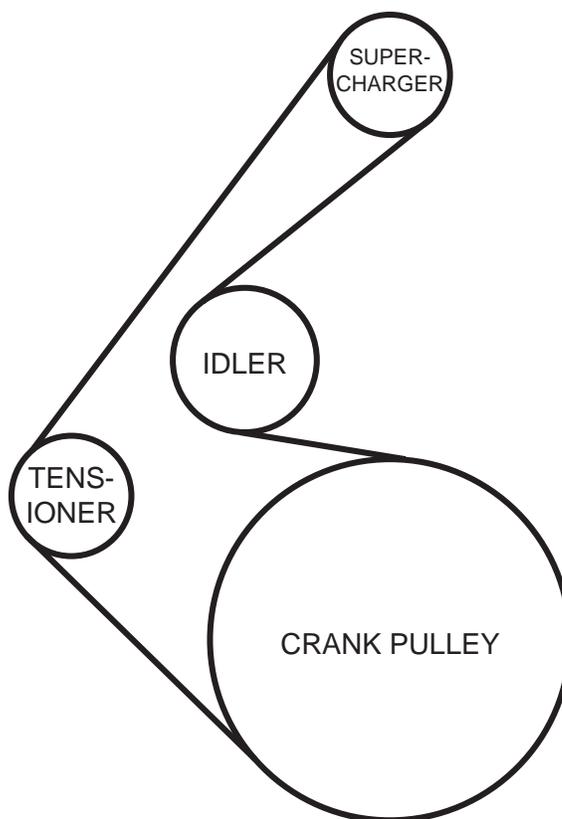
135. Draw out enough coolant to return the reservoir level to its maximum mark. Tighten the cap onto the reservoir.



136. The supercharger is shown fully installed. Verify all hoses and harnesses are connected correctly and all fluids are at the required levels. Switch the key to "ignition" only, and check the display for errors, along with the appropriate diagnostic system (e.g. RossTech VCDS). Clear errors and if they return, investigate before starting the engine. If no errors, start the engine and check for coolant leaks, abnormal noises, vibrations, or engine miss fires. Also check the supercharger belt alignment. After letting the vehicle run for a few minutes check again for any diagnostic errors (e.g. RossTech VCDS). Note the new supercharger does have a slight whining noise under boost conditions, which is normal. After the initial test let the engine cool down, and recheck coolant/fluid levels.



137. Once verifying no diagnostic errors or leaks take the vehicle for an initial test drive, stopping to check for diagnostic errors. When ready, use RossTech VCDS or similar to log the vehicle and gradually work to wide open throttle runs. Follow the APR/RossTech instructions on how/what to log <http://www.goapr.com/support/datalogging.php> If any issues are detected, stop driving the vehicle immediately, verify you have the correct fuel and calibration loaded into the ECU (91 octane min). Then please contact your Magnuson technical support representative for further assistance.



Belt Diagram



Please enjoy your "Magnuson Super-Charged" performance responsibly.

Use only premium gasoline fuel, 91 octane or better.

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